Attachment 6

Coachella Valley Integrated Regional Water Management Implementation Grant Proposal

Monitoring, Assessment, and Performance Measures

Attachment 6 consists of the following items:

- ✓ **Performance Measures**

  The purpose of this attachment is to describe the monitoring, assessment, and performance measures that will be used to evaluate each proposed project. These measures will ensure that this proposal meets its intended goals, achieves measurable outcomes, and provides value to the Region and the State of California.

For each project in this *Coachella Valley IRWM Implementation Grant Proposal*, specific performance measures and monitoring approaches have been developed to assess project performance on an ongoing basis. The purpose of this attachment is to provide a discussion of the monitoring system to be used to verify project performance with respect to the project benefits or objectives identified. For each proposed project, listed below, this attachment will identify data collection and analysis to be used.

This attachment will also discuss how monitoring data will be used to measure the performance in meeting the overall goals and objectives of the Coachella Valley IRWM Plan. Each project applicant has prepared a Project Performance Measures Table (included in this attachment) that includes the following:

- Project goals
- Desired outcomes
- Output indicators – measures to effectively track output
- Outcome indicators – measures to evaluate change that is a direct result of the work
- Measurement tools and methods
- Targets – measureable targets that are feasible to meet during the life of the project

Project 1: Regional Water Conservation Program

To determine the overall success of the *Regional Water Conservation Program*, each agency involved will submit quarterly progress reports to the CVRWMG to discuss the development and accomplishments of their project(s). Each agency will compile and share data with the CVRWMG for project monitoring purposes. Program goals will measure progress through their individual monitoring or assessment program described below.

Program Goals

Reduce urban water consumption: This program goal will be achieved by the successful implementation of a water conservation outreach program. The effectiveness of outreach efforts for this program will be assessed through the number of outreach activities organized and the number of attendees at the events.

Public surveys and questionnaires may also be another measurement tool that will assess the progress of outreach efforts.

Increase land use irrigation efficiency: The conservation program will conduct water audits and corresponding workshops to communicate recommendations regarding ways to increase water use efficiency to local constituents. Through these audits, agency staff or irrigation professionals evaluate irrigation systems for inefficiencies, which are then reported to the owner, property manager, landscaper, etc. Water audits will include flow monitoring, water use records, and visual observations. To measure progress, participating landscape irrigation sites will be audited allowing pre- and post retrofit water use records to be compared. Future water consumption at water audit sites will be compared to baseline measures set by pre-retrofit water use to estimate the amount of savings attained.

Improve water quality: Poor water quality has been linked to over-irrigation runoff. Reducing runoff in urban areas can reduce the deleterious impacts of the pollutants that runoff contains. To effectively measure runoff reductions visual observations will be employed. The data gathered for current conditions by each agency will then be compared to previous years' data to see if changes are reflected.

Reduce need for future imported water supplies: By reducing the demand on the groundwater basin, the Coachella Valley Region will decrease the need for future imported water sources. Monitoring to verify water demand decline in the basin will require understanding of the groundwater profile, water use records, and accounting for annual water use. Measuring progress will be achieved by monitoring water demand in terms of gallons per capita per day (GPCD) of urban water consumption on a five-year basis, as part of each agency's Urban Water Management Plan (UWMP) efforts.

Monitoring System

Water use will be monitored via existing agency accounting and meters and GPCD projections that are accounted for in each agency's UWMP. The data gathered by each agency for production can be compared to previous data to see if changes are reflected.

Table 6-1 summarizes the project monitoring for this project.

Table 6-1: Monitoring Summary
Regional Water Conservation Program

Monitoring Locations	Types of Analyses	Measuring Performances
Customer sites	Public surveys	Increase of quantifiable water conservation savings by 20x2020
Landscape irrigation sites	Customer pre-and post- retrofit water use records	Average water use reduction of 25 percent for residential retrofit site
Existing agency meters	Flow monitoring, water use records, customer meter data	GPCD in line with 20x2020 targets for each agency

Table 6-2 summarizes performance measures for this project.

Table 6-2: Performance Measures Table
Regional Water Conservation Program

Project Goals	Desired Outcomes	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
Reduce urban water consumption	Successful implementation of water conservation outreach campaign	Customers valley-wide are implementing water conservation measures No. of water conservation events (workshops, fair exhibits, etc) conducted	Change in attitude that water conservation is a priority and duty Market chain responds to demand for water-wise plants	Public surveys and questionnaires List of conservation events	Increase of quantifiable water conservation savings by 20 percent by 2020
Increase landscape irrigation efficiency	Reduced landscape irrigation demand at participating sites	50 percent of sites where audits were preformed have irrigation or landscape retrofits performed	Retrofitted sites reduce use by 25 percent	Customer pre- and post-retrofit water use records	Average water use reduction of 25 percent for residential retrofit site
Improve water quality	Reduced runoff due to over-irrigation	50 percent of implementation sites that have visible evidence of irrigation runoff	25% reduction in dry weather runoff	Visual observations	Reduction in observed dry weather runoff
Reduce need for future imported water supplies	By reducing demand on the groundwater basin, we can decrease our need for future imported water	Future need for imported water supply is concurrently reduced with decreased demand	Decrease future need for imported water in line with decreased demand	Water demand statistics (GPCD)	GPCD in line with 20x2020 targets for each agency

Project 2: Short-Term Arsenic Treatment (STAT) Project

The purpose of the *Short-Term Arsenic Treatment Project* is to (1) implement five point-of entry reverse osmosis water treatments systems, (2) implement 280 point-of-use reverse osmosis water treatment systems, (3) address arsenic-related water quality issues within the local drinking water supply, and (4) provide water that is reliable and of improved quality to disadvantaged communities consisting of farm worker families. To successfully achieve project purposes, monitoring programs will be implemented for each project goal to ensure that progress is being made. Below is a list of project goals and their corresponding monitoring methods:

Project Goals

Improve water quality: This project goal will directly address water quality issues within local drinking water supplies. The water quality measuring method that will be implemented to monitor the progress of water quality will be sampling and certified laboratory analysis of the samples. Samples will be taken and submitted for analysis at certified laboratories; pollutant concentrations will be analyzed and documentation of water quality will be reported. Improving water quality will be concluded from laboratory analysis.

DAC engagement: The project has made a goal to include DACs in the STAT project processes at the grass roots level. One task of the project is to install point of use (POU) device to mitigate arsenic-related water quality issues within DACs. Another similar task will provide gallons used measurement for point of entry (POE) systems. Both tasks will require DAC participation and engagement. To gauge the progress of DAC engagement, POU devices and gallons used for POE will be quantified.

Monitoring System

STAT baseline is untreated water. Water has been sampled throughout the East Valley and reflected in reports prepared by the Rural Community Assistance Corporation (RCAC). Water samples will be taken before installation and after treatment for 1 year and submitted for analysis at a certified laboratory. Additional baseline sampling will be done as part of ongoing IRWM efforts. The results will be compared to the MCL and to the level before treatment. STAT data will be compatible with SWAMP and Riverside County Health database formats.

Table 6-3 summarizes the project monitoring for this project.

Table 6-3: Monitoring Summary
Short-Term Arsenic Treatment Project

Monitoring Locations	Types of Analyses	Measuring Performances
Installation sites	Installations of POU or gallons used for POE	80% installation of POUs and 75% installed capacity of POEs
Sampling locations	Certified laboratory analysis	Less than 5% of samples above MCL

Table 6-4 summarizes the project monitoring for this project.

Table 6-4: Performance Measures Table
Short-Term Arsenic Treatment Project

Project Goals	Desired Outcomes	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
Improve Water Quality	Drinking water below MCL for project areas	Monitoring of treated water	Percent of samples below MCL	Certified Laboratory Analysis	Less than 5% of samples above MCL
DAC Engagement	More engaged DAC entities	Number of installations or services	Participation in Point of Entry or Point of use	Installations POU or Gallons used for POE	80% installation of POUs and 75% installed capacity of POEs

Project 3: Groundwater Quality Protection Program-Desert Hot Springs

The purpose of the *Groundwater Quality Protection Program-Desert Hot Springs* is to (1) extend the MSWD municipal wastewater collection system to Sub-area D1 in Assessment District 12, (2) eliminate the need for on-site septic systems in the project area, and (3) assist compliance with State law and an MSWD ordinance that require customers to connect to the wastewater collection system once it is available to their property. The project will expand wastewater collection systems, enhance water quality by protecting drinking water supply, and reduce septic tank density. Each project goal will be complimented by a monitoring or assessment program to quantify and verify overall project performance.

Project Goals

Maximize local supplies: Maximizing local water supplies can be achieved by capturing septic tank effluent for possible recycled use. Each septic tank abated can be counted as an increased source for recycled effluent therefore the act of tallying septic tanks would reflect local supply increases.

To effectively monitor if local supplies are being maximized the project will also implement a monthly flow reporting plan to reflect increases. Flow reports will gather influent flows to the Horton Wastewater Treatment Plant HWWTP (the source for future recycled water). The influent flows will reveal water supply increase from recycled water (from septic tank abatement). Monthly reports will also identify new sewer connections which will indicate local supply increases.

Protect potable groundwater: For the protection of the groundwater quality, annual potable water tests for nitrate will track the water quality main indicator from septic tank contamination, and the number of septic to sewer conversions also provides a basis for improved water quality potential. As mentioned above, a tally of all septic tanks in the area will be performed and will establish the baseline of septic tanks. Future accounting of the number of septic takes will effectively determine whether septic tank densities are being reduced which is associated with greater water quality.

The water quality data will demonstrate the success of diverting the septic tank effluent through the nitrate levels long term trends not showing an increase, resulting in protection of the groundwater quality, including the added benefit of maintaining the quality of the hot water basin as well, and protecting the #1 economic commerce of the DAC.

Proved expansion for wastewater collection and treatment systems: For the expansion of the collection and Wastewater Treatment Plant (WWTP) systems, influent flow records will provide the basis for evaluating the amount of potential recycled water use that might become available and when the HWWTP will need to be expanded. Also, monthly reports will also identify new sewer connections which will indicate expansion of wastewater collection and treatment systems.

Avoid costly treatment associated with contaminated water supply: Eliminating the potential for nitrate contamination in water supplies will help project proponents avoid costly mitigation measures. It is, therefore imperative that continual monitoring for nitrates in potable wells be implemented in order to achieve this project goal. As stated above, annual potable water tests for nitrate will track the water quality main indicator from septic tank contamination. Tests will ensure that nitrate levels remain below the MCL and costly treatments remain unnecessary. This monitoring system will reflect program progress with respect financial savings.

Monitoring System

For the recycled effluent #4 and the expansion of the collection and WWTP systems #12, a tally of all septic tanks abated and the HWWTP influent flow records will provide the basis for evaluating the amount of potential recycled water use that might become available and when the HWWTP will need to be expanded. For the protection of the groundwater #5 and avoiding treatment #13, annual potable water

tests for nitrate will track the water quality main indicator from septic tank contamination, and the number of septic to sewer conversions also provides a basis for improved water quality potential.

The data will support the success of diverting the septic tank effluent in two ways, one showing the diversion through increased flow to the HWWTP, that would then be available for recycled uses, and through the nitrate levels long term trends not showing an increase, resulting in protection of the groundwater quality, including the added benefit of maintaining the quality of the hot water basin as well, and protecting the #1 economic industry of the DAC.

Groundwater quality and recycled water use are goals of the Colorado River RWQCB Basin Plan. Specifically the Mission Creek and Desert Hot Springs sub basins are designated as areas for concern with regard to threat of contamination due to septic tank discharges overlying the basins (Basin Plan : Chapter 4-II.H. Implementation, Point Source Controls, Septic Systems - Mission Creek or Desert Hot Springs Aquifers). This is further supported by the CA Water Code Section 13281 detailing and addressing these same problems.

Table 6-5 summarizes the project monitoring for this project.

Table 6-5: Monitoring Summary
Groundwater Quality Protection Program-Desert Hot Springs

Monitoring Locations	Types of Analyses	Measuring Performances
Horton Wastewater Treatment Plant	Flow/Influent monitoring	Expansion of the HWWTP and the collection system, including; installation of 20,000 feet of sewer lines.
Horton Wastewater Treatment Plant	Record of recycled water deliveries	Build Tertiary component at HWWTP. Design and build recycled water delivery system. Increased flows to HWWTP of approx. 71,000 gpd. 295 new sewer connections from D1 area.
Potable wells overlying the Desert Hot Springs Subbasin	Water quality monitoring	Nitrate levels to remain below the MCL
Surrounding area	Septic tank tally	Abatements of septic tanks

Table 6-6 summarizes performance measures for this project.

Table 6-6: Performance Measures Table
Groundwater Quality Protection Program-Desert Hot Springs

Project Goals	Desired Outcomes	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
Maximizes local supplies by capturing septic tank effluent for possible recycled water use	Reduce septic tank discharges- improved water quality- recycled water use	Each septic tank abated can be counted as increased source for recycled effluent	Increasing flows to the HWWTP. Increase in sewer connections in the D1 project area	Influent flow to HWWTP provides the source for future recycled water purposes. Monthly flow reports will reflect increase; new sewer connections report will reflect increase.	Increased flows to HWWTP of approx. 71,000 gpd. 295 new sewer connections from D1 area.
Protects potable groundwater including hot water basin which will preserve the DAC's main economic engine	Reduce/eliminate septic discharge in the project area. Hot water supply for spa industry remains reliable and unaffected.	Monitor groundwater wells for nitrate.	No substantial or sustained long term trend in increase of nitrate levels in potable wells over the Desert Hot Springs hot water basin	Continued annual monitoring for nitrates in potable wells overlying the Desert Hot Springs Subbasin	Nitrate levels to remain below the MCL
Provides for expansion of the wastewater collection and treatment systems	New sewers and expanded WWTP facilities.	Increased flows at HWWTP. 20,000 feet of sewer mainlines and lateral are installed.	Increasing flows to the HWWTP will initiate expansion.	Influent flow increases. Increase in 12,000 feet of sewer mainline & 8,000 feet of sewer laterals in project area.	Expansion of the HWWTP and the collection system, including abatements of septic tanks; installation of 20,000 feet of sewer lines.
Avoid costly treatment associated with contaminated water supply	Eliminate the potential for nitrate removal systems to be installed at potable wells	Monitor groundwater wells for nitrate.	No substantial or sustained long term trend in increase of nitrate levels in potable wells over the Desert Hot Springs hot water basin	Continued annual monitoring for nitrates in potable wells overlying the Desert Hot Springs Subbasin	Nitrate levels to remain below the MCL

Project 4: Groundwater Quality Protection Program-Cathedral City

The purpose of the *Groundwater Quality Protection Program-Cathedral City* is to (1) eliminate septic tanks in Cathedral City (within the Indio Hydrologic Subarea) that threaten contamination of groundwater (2) replace existing septic tanks with sanitary sewers for 132 individual businesses in the vicinity of Perez Road from Date Palm Drive to Cathedral Canyon Drive and on Cathedral Canyon Drive from Perez Road to the Whitewater River (3) expand the Coachella Valley Water District (CVWD) wastewater collection system to serve the proposed project area, and (4) connect the CVWD wastewater collection system to a booster pump station. The project will protect groundwater quality, increase local recycled water supply, and implement a sewer connection project. Each project goal will be complimented by a monitoring or assessment program, as described below, to quantify and verify overall project progress.

Project Goals

Protect and improve groundwater quality: Improving and protecting groundwater quality will be achieved by eliminating septic tanks. Reduced septic tanks will remove contamination sources. To quantify groundwater quality improvements, CVWD or Desert Water Agency (DWA) will perform a groundwater quality monitoring program that will sample and test for various chemical contaminants of concern. This monitoring program will be ongoing to accurately provide information to evaluate the effectiveness of eliminating septic systems and its correlation to improved groundwater quality.

Address water and sanitation needs of disadvantaged communities (DACs): To address the water and sanitation needs of DACs, groundwater quality monitoring (described above) will determine this project goal's performance since DACs are scattered throughout the City of Cathedral City.

Another method that this project will use to measure project progress regarding water needs of the DACs will be to quantify the number of DAC dwelling units that are converted from septic to sanitary sewer systems.

Address water-related needs of local Native American culture: Similar tools used for DAC's needs will be employed for local Native American water-related needs such as water quality monitoring. The project will address a tribal-identified water-related need by protecting and potentially improving groundwater. Additionally, ongoing communications with local tribes will be documented and used as a measurement tool to assess this project goal's performance. Increased communications will ensure that local Native American water-related needs are being considered and managed.

Improved system reliability: This project will connect approximately 132 businesses to the CVWD wastewater collection system expanding and improving system reliability. Old, energy intensive wastewater pumping stations will no longer be needed in these business districts because the project will replace the old system with a gravity sewer system. Improved reliability will result from reduced dependence on transported energy sources. To measure system reliability, energy consumption measured in kW hours will be collected. A reduction in kW's consumed will indicate higher system reliability.

Increase quantity of reclaimed water: This project will help to coordinate and integrate water resource management by providing additional wastewater supplies to CVWD by connecting septic systems to sanitary sewer systems, thereby indirectly increasing the quantity of reclaimed water available in the region. To effectively measure an increase in reclaimed water, the project will employ methods that will quantify reclaimed water utilization.

Monitoring System

Desert Water Agency (DWA) has implemented an ongoing groundwater quality monitoring program that will be utilized for this project. This monitoring program will provide information to evaluate the effectiveness of converting septic systems to sanitary sewer and improvement to groundwater quality.

Reducing the potential public health hazards related to overflowing/malfunctioning septic tanks is also a primary goal.

In 2002, the Colorado River RWQCB-7 stated in its "Colorado River Basin Water Quality Control Plan and Watershed Management Initiative Chapter" that contamination of groundwater resources east of the Whitewater Channel due to the use of septic tanks is an issue of regional concern and violates CWC Section 13225. The RWQCB-7 identifies the protection of groundwater resources throughout the Cathedral City area to be of high priority and regional significance and recommends that funding be allocated to eliminate the use of septic tanks. DWA has shut down Well #19 due to high nitrate levels associated with septic tank leach lines. Once the septic systems are eliminated the nitrate levels will diminish allowing for the possibility of re-establishing Well #19.

Table 6-7 summarizes the project monitoring for this project.

Table 6-7: Monitoring Summary
Groundwater Quality Protection Program-Cathedral City

Monitoring Locations	Types of Analyses	Measuring Performances
Septic tank sites	Groundwater quality monitoring	Re-establish DWA well #19 as a potable water source.
Energy sources	Energy consumption	Ultimate removal of pumping station.
Treatment plant	Inflow monitoring	Quantity of reclaimed water utilized.

Table 6-8 summarizes performance measures for this project.

Table 6-8: Performance Measures Table
Groundwater Quality Protection Program-Cathedral City

Project Goals	Desired Outcomes	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
Water Quality	Protect and improve groundwater quality	Improve groundwater quality by eliminating failing septic tanks	Number of connections to sanitary sewer system. EDU's converted from septic system to sewer	Reduction in nitrate content of sub-basin groundwater	DWA groundwater quality monitoring program
Water Quality	Address water and sanitation needs of disadvantaged communities	Improve groundwater quality and eliminate potential public health problems by converting failing septic tanks to public sewer.	Number of connections to sanitary sewer system. EDU's converted from septic system to sewer	Reduction in nitrate content of sub-basin groundwater. Eliminate potential public health hazard.	Groundwater Quality: DWA groundwater quality monitoring program. Public Health: number of connections to sanitary sewer system.
Water Supply	Address water-related needs of local Native American culture	Improve groundwater quality by eliminating failing septic tanks	Number of connections to sanitary sewer system. EDU's converted from septic system to sewer	Support protection of culturally-significant resources on tribal lands	Address Native American needs through ongoing communication with local tribes
Power Cost Savings and Production	Improved system reliability	Reduce energy consumption by eliminating an existing wastewater pumping station.	Successful bypassing of flows from existing pumping station to gravity sewer system	Reduced power consumption and improved system reliability due to elimination of pumping station.	Energy consumption measured by kW hours. Maintenance costs measured by reduction in budget.
Use and re-use water more efficiently	Increase quantity of reclaimed water	Provide additional reclaimed water by connecting existing failing septic systems to sanitary sewer	Inflow to wastewater treatment plant	Quantity of reclaimed water utilized.	Quantity of reclaimed water utilized.